Arboricultural Method Statement

For resurfacing

Avebury Visitor Car Park

On behalf of

The National Trust
Estate Office
High Street
Avebury
SN8 1RF

Inspected and prepared by

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28th November 2023

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Appendix 1: Tree protection plan – Drawing # TPP-1A

Appendix 2: Car Park Construction Details – Craddys – Drawing # 13010sk0013B

1 INTRODUCTION

1.1 Background information

1.1.1 The National Trust proposes a new development at their visitor car park in Avebury which is located at 1 Beckhampton Road (SN8 1QT). This land is hereafter referred to as the 'site'. This would involve reorganising and resurfacing the car park.

1.2 Instruction

1.2.1 Bosky Trees Ltd has been employed to advise on the project design and specify suitable measures to protect retained trees during construction.

1.2.2 This method statement provides details of how planned operations near trees will be carried out. However, arboricultural supervision will be required if any unforeseen construction activity is to take place within or adjacent to the root protection area (RPA) of any of the retained trees at the site (the RPAs are indicated on the tree protection plan). This supervision must be carried out by a suitably qualified arboriculturist. It is recommended that the project arboriculturist and the local authority's tree officer are informed of necessary works near trees as soon as they become apparent.

1.3 Contacts and responsibilities

1.3.1 **Project arboriculturist:** Ben Rose, Tel. 07872 609633; ben@boskytrees.co.uk

1.3.2 The project arboriculturist shall be responsible for independently monitoring the effectiveness of tree protection at regular intervals and report all findings in writing back to the client, the project site manager and the local planning authority. They may also be instructed to provide additional advice should unforeseen circumstances develop.

1.3.3 **Site manager:** TBC

1.3.4 The site manager must be provided with a copy of this document and a copy should be available be kept available in the main site office for quick and easy reference. It is the site manager's responsibility to pass on the information in this document to all construction staff and site contractors.

1.3.5 The arboricultural method statement must be used as a reference source for site operatives in order to guide tree-related aspects of the construction process. A precautionary approach is required.

2 GENERAL METHOD STATEMENT FOR EFFECTIVE TREE PROTECTION

2.1.1 Trees are vulnerable to root damage caused by ground disturbance, direct injury of the trunk or branches, environmental change, pests, and diseases. Construction work often exerts pressures on existing trees, and a tree that has taken many decades to reach maturity can be damaged irreparably in a few minutes by unwitting or negligent actions.

2.1.2 For this project temporary fencing will be used during construction to protect the retained trees at the site until the cellular confinement system has been laid. The extent of the tree protection fencing that will be required is shown on the tree protection plan, TPP-1A (this is provided at the rear of the document). For effective tree protection it is crucial that the protective fencing is installed before any heavy plant machinery is used on the site. The fenced off areas will be a construction exclusion zone.

2.1.3 Soil compaction quickly occurs if vehicles pass over an area of soil. Compaction may cause reduced infiltration rates of water, poor drainage, reduced availability of water, and reduced air and oxygen supply to roots. This leads to reduced root growth and as a result the health of the tree is impacted. Therefore, to ensure that soil compaction is avoided, it is very important that no vehicles enter the fenced-off areas during construction operations.

2.1.4 All construction staff should be made aware of the following restrictions that apply to the construction exclusion zone:

1. No excavation or raising of soil levels is permitted within the construction exclusion zones without written permission from the project arboriculturist.

2. No utility trenches are to be routed through a construction exclusion zone without written permission from the local authority's arboricultural officer.

3. Care must be taken when planning site operations to ensure that wide or tall loads, or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Branches may be tied back so that they are out of the way if necessary.

4. Potential contaminants such as fuel, oils and chemicals must be stored on an impervious base within a bund able to contain at least 110% of the volume stored. Provision must also be made for any spillage or run off to be contained away from the protected area.

5. Cement and concrete mixing must take place at least 10m from any trees, over a suitable hard surface to prevent soil contamination from spillage or washing out.

6. Fires should be avoided, however if permitted by the site manager, they must not be lit in a position where heat could affect foliage or branches, (At least 15m from the base of a tree would normally be sufficient).

3 SPECIFICATION FOR TREE PROTECTION FENCING

3.1 The location of tree protection fencing

3.1.1 The extent of the tree protection fencing that will be required is shown on the accompanying tree protection plan (TPP-1A). For effective tree protection it is crucial that the protective fencing is installed before any heavy plant machinery is used on the site. The tree protection fencing must remain in place until the construction works have been completed (unless under arboricultural supervision). The fenced off areas will be construction exclusion zones.

3.1.2 The supervising arboriculturist will check the positioning of the tree protection fencing and confirm that it is fit for purpose before works start near by.

3.2 Installing the tree protection fencing

3.2.1 Fencing (or other forms of barrier) must be fit for the purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees. In most cases fencing should consist of a scaffold framework comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m (as detailed in in Figure 2 of BS5837). That would be appropriate, but for this project I expect that the most practical fencing to use would be Heras fencing that has been fixed in place (as detailed in figure 3a of BS5837). Therefore, it is proposed that Heras fencing is used, and that the feet are pinned, or the panels braced, to prevent contractors from being able to easily move the feet and alter the fence alignment during construction. Heras produce support braces that can be used to stabilise fence panels.

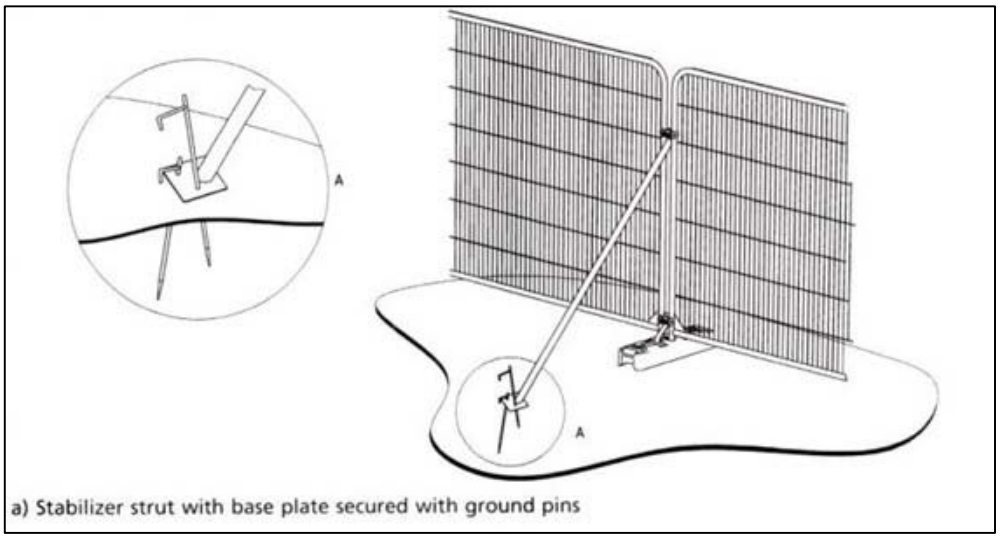


Figure 3a of BS5837:2012.

3.2.2 Once the barriers have been erected the areas of land within the construction exclusion zone should be regarded as sacrosanct, and should not be removed or altered without prior consultation with the project arboriculturist and, where necessary, approval from the local planning authority.

4 METHOD STATEMENT FOR THE INSTALLATION OF CELLULAR CONFINEMENT SYSTEMS

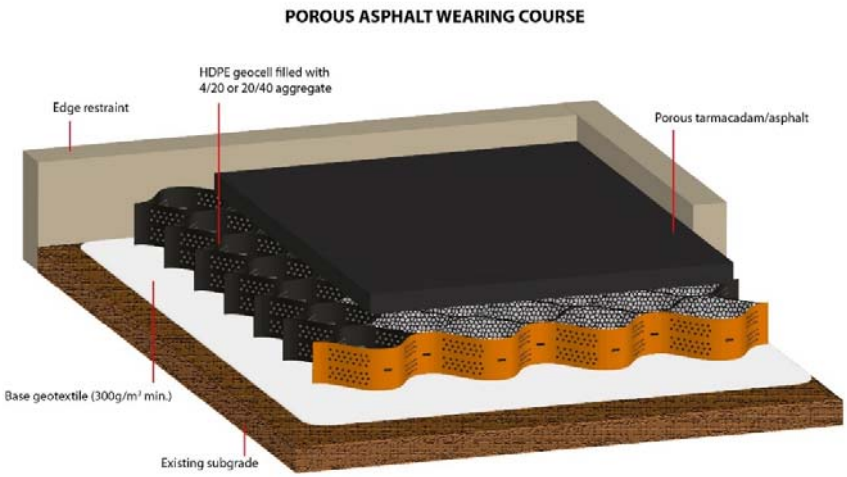
4.1 The approach to ground protection

4.1.1 The development proposal includes new surfacing along the main access road past a large ash tree. The tree is likely to be rooting in soil beneath the area to be surfaced. Therefore, it will be necessary to use a cellular confinement system to create hard surfacing in this area because this approach avoids the requirement for digging into the soil and damaging tree roots. A 100mm thick cellular confinement system will be used in this project and with the UltiSuDS porous asphalt the final surface will be approximately 270mm above the existing ground level.

4.1.2 The area where the cellular confinement system will need to be used is hatched with a honeycomb pattern on the tree protection plan. The initial ground preparation works in these areas are to be carried out under the supervision of the project arboriculturist.

4.1.3 The purpose of using this technology is to avoid damaging the soil structure through compaction. Soil damage of this nature may disrupt the efficient exchange of water and gasses in and out of the soil and inhibit root growth. Mature trees are more vulnerable to disturbance of this nature when compared to younger trees. Soil compaction is commonly caused by repeated walking over soil or vehicular traffic. The use of a cellular confinement system reduces the bearing pressure on the subsoil by preventing aggregate surfaces from rutting by vehicle wheels or tracking. Even one pass over soil by a vehicle compacts the soil and so it is therefore crucial to protect the area that is to be covered with a cellular confinement system from the beginning of construction works.

4.1.4 To install a cellular confinement system the first step is to lay a geotextile on the ground. This is followed by the cellular confinement system, which is then filled with clean angular stone 4–20mm or 20–40mm with no fine material. Settlement of the stone is achieved by tracking the digger over the cells. A second geotextile layer is then laid down prior to the top dressing. A wearing course of a stabilisation grid filled with soil would be suitable for the final surfacing.



4.1.5 Standard installations require a tracked excavator and a dumper truck. The excavator should be fitted with an un-toothed spreading bucket. The ground-pressure of a tracked excavator is sufficiently small to prevent soil compaction and so it may be used on unprotected ground; works should start at one end of the surface and work progressively past the trees so that the need for manoeuvring is reduced. However, the dumper should not be allowed to pass over unprotected soil. The dumper can tip stone directly into the cells and the spreading bucket of the excavator can be used to distribute the stone into the cells.

4.1.6 It will be necessary to take steps to create a relatively even surface beneath the area where the cellular confinement system is to be laid. A small degree of ground preparation may be required before the bottom geotextile is laid; this will involve the removal of up to uneven ground and surface vegetation. Rocks may be removed and any depressions may be filled with sharp sand or clean angular stone prior to the geocell being laid. No herbicide will be necessary because the geotextile and surface layers will be sufficient to prevent vegetation growth beneath the trail.

4.1.7 The trenching required for conventional kerb edging set in concrete is likely to result in damaged roots and should be avoided. Edging is not required for the cellular confinement system but it will be required to retain the surface layer. Either kerb stones set above ground level or treated timber 'peg and board' edging is advised.

4.1.8 Cellular confinement system providers include Greenfix (Tel. 01608 666027); Wrekin ProtectaWeb (Tel: 01453 440440) and Core LP (Tel. 0800 118 2278).

4.2 Installing the cellular confinement system

4.2.1 When it is time to install the cellular confinement system the following procedure must be followed:

1. Ensure that all of the necessary materials are on site and an arboriculturist is on site to supervise the works.

2. To prepare the ground a mini-digger with a grading bucket can be used to remove the existing stabilisation grids and sub-base that make up the existing driveway. These works will be carried out under arboricultural supervision and excavations will cease if any tree roots are encountered. Where necessary, surface levels are to be adjusted to avoid damaging tree roots.

3. Install the kerb stones in concrete that is laid on top of the geotextile. Wooden pegs may be used to further stabilise the kerb stones if required. Alternatively install peg and board edging, these must be treated timber boards (min 25mm thick) set above the existing ground level (so that root damage is avoided). Pegs will be required at 1m spacing to prevent the side boards from bowing.

4. The area to be surfaced must be covered with a non-woven geotextile that will prevent different mineral materials mixing while allowing water to pass through. This geotextile must cover the entire area to be paved. If several sheets are required ensure that they overlap by at least 30cm.

5. Once the surface is ready expand the cellular confinement panels to their full length. Pin the geogrid with staking pins to anchor open the cells and staple adjacent panels together to

create a continuous mattress. Remove surplus cells using a Stanley knife with a hooked blade. Immediately adjacent panels shall be connected by providing four staples at each overlap.

6. The expanded panels shall be infilled with the appropriate aggregate (clean angular stone 4–20mm with no fine material). The cells need to be overfilled by 25mm to protect their upper edges from being bent out of shape. Construction vehicles may only track over cells that have already been stone-filled.



Figure A: An example of a cellular confinement system being laid.

7. Settlement of the gravel should be with 4 passes of a smooth roller (max weight of 1000kg/m width without vibration) or several passes with a mini-digger. Once the gravel has settled more should be added to provide 25mm excess above the upper edge of the cells.

8. Lay the permeable top dressing in the standard manner.

9. Once the top dressing has been installed a layer of topsoil and leaf litter may be applied to the soil surface near the tree to create a new gradient. This new layer must be no deeper than 250mm.

5 AGENDA FOR ARBORICULTURAL SUPERVISION

5.1.1 There will be a pre-commencement site meeting between the project arboriculturist and the construction site manager. During this 'toolbox talk' the arboriculturist will explain how trees could potentially be damaged by construction works and discuss how such damage can be avoided, and the agreed methodology for the works will be fully explained. The toolbox talk will also provide an opportunity for the contractor to raise and issues with working methods or features that they think could potentially impact the retained trees. At this point the location and suitability of the tree protection fencing will be checked by the project arboriculturist. A record of this meeting will be produced by the arboriculturist and this will be supplied to the Wiltshire Council tree officer.

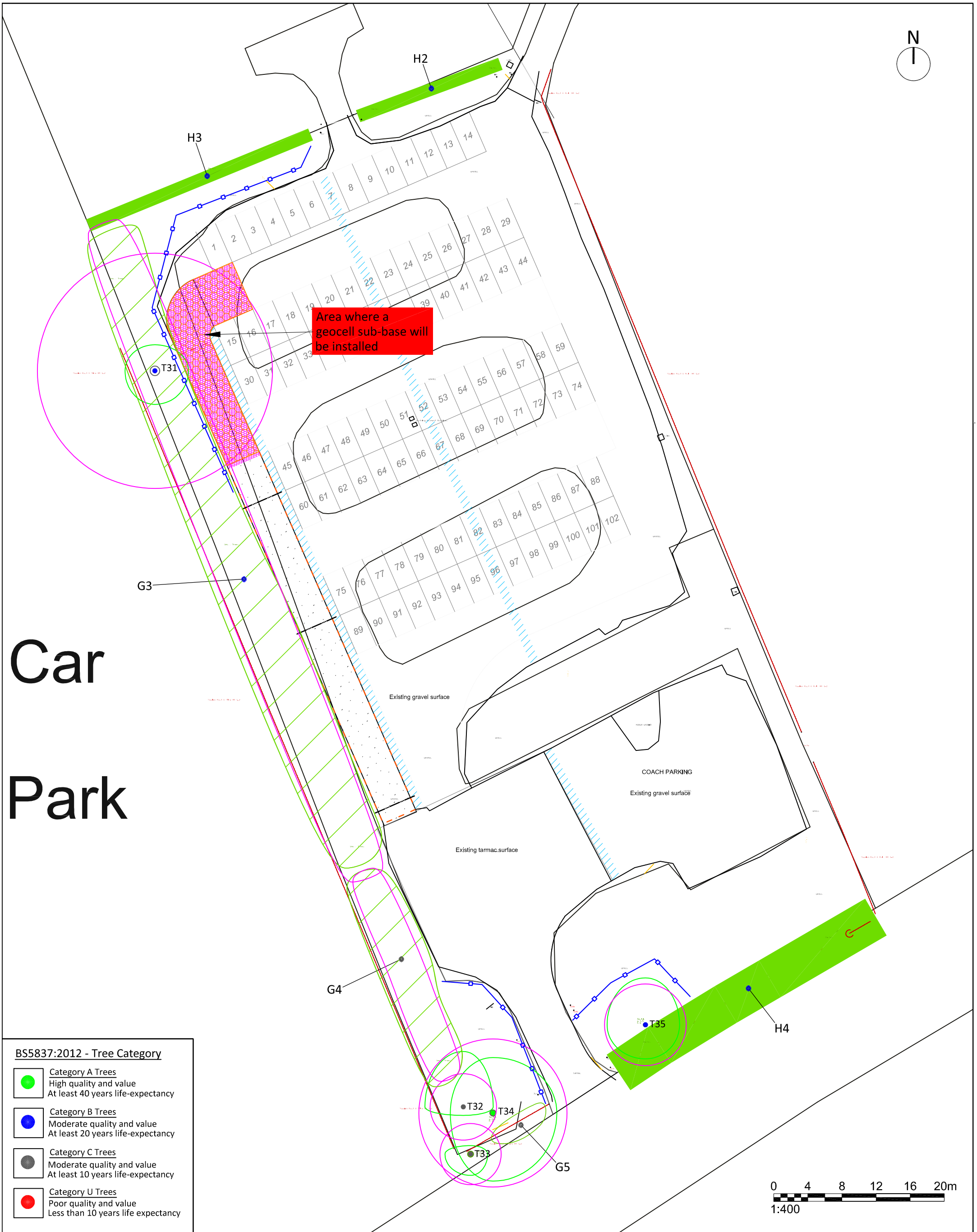
5.1.2 The necessary ground preparation prior to the installation of the cellular confinement system will need to be carried out under arboricultural supervision. The supervising arboriculturist will make a record of each visit and make this available to the local authority tree officer.

Table 1: Agenda for arboricultural supervision.

Item no.	Phase	Works description
1	Pre-commencement	Tree protection put in place.
2	Pre-commencement	Toolbox talk from project arboriculturist.
3	Pre-commencement	Certificate of tree protection fencing compliance submitted.
4	Construction	Supervision of the ground preparation in advance of installing the cellular confinement system adjacent to T31.

5.1.3 Supervision by a suitably qualified arboriculturist will also be required if any unforeseen construction activity is to take place within the root protection area of any trees retained on or near the site. The project arboriculturist and the local authority's arboricultural officer should be informed of necessary works near trees as soon as they become apparent.

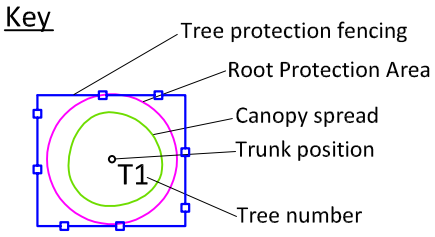
Car Park



BS5837:2012 - Tree Category

- Category A Trees
  High quality and value
  At least 40 years life-expectancy
- Category B Trees
  Moderate quality and value
  At least 20 years life-expectancy
- Category C Trees
  Moderate quality and value
  At least 10 years life-expectancy
- Category U Trees
  Poor quality and value
  Less than 10 years life expectancy

Key



Tree group canopy outline

Hedge line

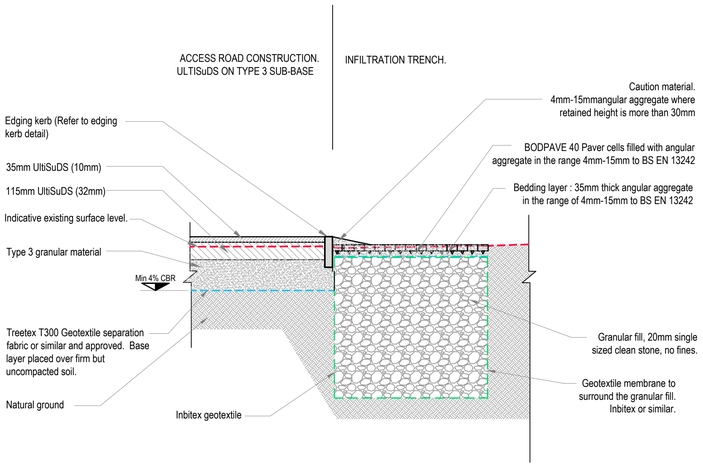
Area where the arboricultural method statement is to be followed

BOSKYTREES

Rook Lane House
Christchurch Street West
Frome, BA11 1EB

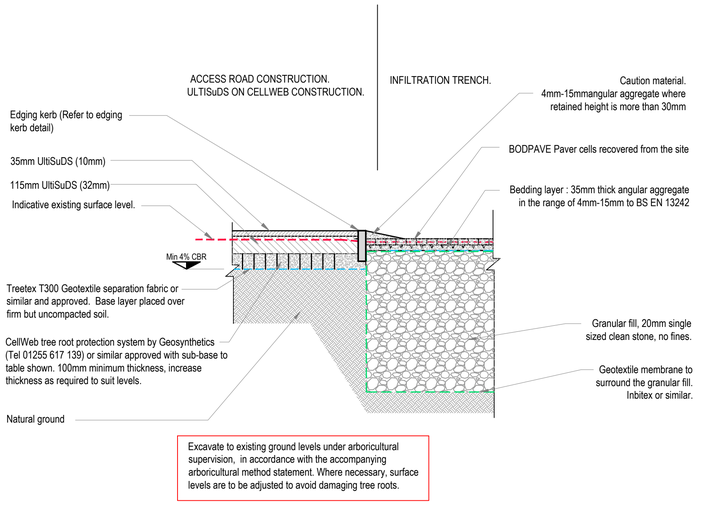
info@boskytrees.co.uk
Tel: 01373 832778

Project Name:	Visitor Car Park Avebury
Client:	The National Trust
Agent:	
Drawing Title:	Tree Protection Plan
Date:	28-11-2023
Drawing Number:	TPP-1
Revision	A
Scale:	1:500 @ A3



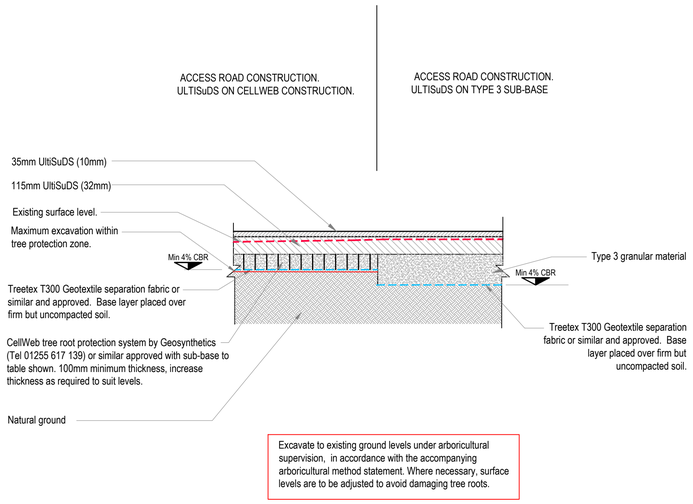
Interface between Access Road on Tye 3 Sub-Base and Infiltration Trench

Scale 1:20



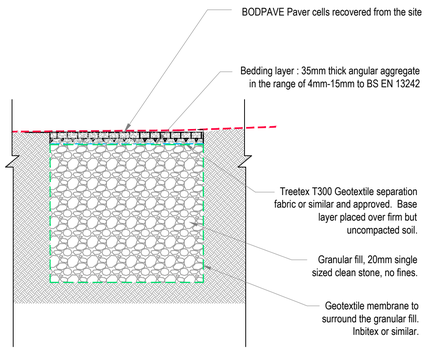
Interface between Access Road on Cellweb and Infiltration Trench

Scale 1:20



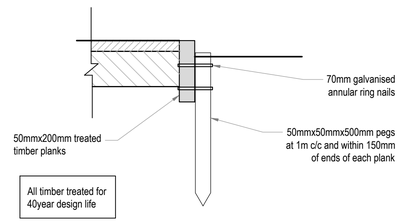
Interface between Access Road on Cellweb and Access Road on Type 3 Sub-Base

Scale 1:20



Infiltration Trench detail

Scale 1:20



Timber edging detail

Scale 1:10

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GENERAL NOTES

DRAWINGS AND SPECIFICATIONS: This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialists drawings together with the specification.

BUILDING REGULATIONS AND WARRANTY PROVIDER APPROVALS: Please note that it is the responsibility of the Client/Main Contractor to ensure that Building Regulations and warranty provider (e.g. NHBC) approval of all design and construction details is achieved prior to construction on site.

C D M : SIGNIFICANT HAZARDS

THE FOLLOWING HEALTH AND SAFETY HAZARDS ARE IDENTIFIED BY THE DESIGNER AS ABNORMAL IN PURSUANCE OF THE CURRENT CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS.

RISKS DURING CONSTRUCTION:
- No abnormal risks have been identified relating to this design element.

OPERATION / MAINTENANCE RISKS:
- No abnormal risks have been identified relating to this design element.

RISKS DURING DEMOLITION / DECOMMISSIONING / DISMANTLING / ALTERATIONS:
- No abnormal risks have been identified relating to this design element.

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY COMPETENT & ADEQUATELY RESOURCED CONTRACTOR(S) WORKING TO SAFE SYSTEMS OF WORK.

REV	REVISION DETAILS	BY	DATE
B	KERB DETAIL CHANGED. NOTE FOR EXCAVATING WITH THE TPA REVISED.	CS	22.09.23
A	INITIAL ISSUE	CS	21.09.23

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PROJECT TITLE
AVEBURY NATIONAL TRUST
CAR PARK RESURFACING WORKS

DRAWING TITLE
CONSTRUCTION DETAILS

CLIENT
NATIONAL TRUST

STATUS
APPROVAL

SCALE AT A1	DRG SIZE	DRAWN	CHECKED	APPROVED
AS SHOWN	A1	CS	AR	AR

JOB NO.	DRAWING NUMBER	REV
13010	13O1Osk0013	B